Presbyopia and the Sustainable Development Goals

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We appreciate the Comment from Rohit Khanna and Gullapalli Rao[1] on our Article,[2] and would like to address some of the important points they raise. The authors mention that "no information is available about the median values and range" of the main outcome. The distributions of outcomes were of sufficient size, and were sufficiently normal, to justify the exclusive use of means and SDs. To this end, we provided error bars (indicating 95% CIs) in figure 2, and provided means and confidence intervals for the baseline and evaluation periods for both study groups in table 2 and the main text. Furthermore, a URL for our raw data is provided in the text for readers interested in exploring the dataset further. At baseline, the median weight of tea picked was 25·3 kg (range 18·7–36·7) for the control group versus 25·0 kg (13·7–34·9) for the intervention group. At follow-up, the median was 30·4 kg (21·3–48·9) for the control group versus 34·4 kg (21·1–49·8) for the intervention group. By comparison with the means reported in the Article, the means and medians for the primary outcome in both groups are similar at baseline and follow-up, as might be expected for normally distributed data, which justifies our exclusive use of the means and SDs.

The authors mention that "it would be good to understand these additional factors that can influence productivity". We acknowledge and summarise the effect of several other factors on productivity, including age, sex, years of experience, height, work attendance, working distance, and un-corrected near visual acuity, in table 3 and in the text. The large sample size and randomised design suggests that there are unlikely to be large differences at baseline between study groups in other, unassessed factors affecting productivity.

Khanna and Rao note that "it would be interesting to see whether this high difference in productivity persists at all ages". As stated in the Article, the productivity difference between study groups was actually greater among older than among younger workers in the intervention group, as would be expected for presbyopia, a condition which worsens with ageing.

The authors suggest that "there could have been an increased difference in productivity in both groups due to seasonal variation". Although both groups did in fact experience an increase in productivity due to seasonal variation, as mentioned in the Article, it seems unlikely that the difference between the study groups in change in productivity would have resulted from this. Because of the randomised nature of the study, both groups were similar at baseline in terms of other likely predictors of productivity, making it unlikely that they would have responded differently to seasonal variation for reasons other than the intervention. Also, the duration of the evaluation period (3 months) makes it unlikely that seasonal variability in yield between fields would have contributed to the observed productivity difference between groups, because workers rotated daily throughout the various fields. Finally, if the difference in productivity between groups was not causally related to the amelioration of presbyopia with glasses in the intervention group (that is, because of some other factor associated with seasonal variation), it would be difficult to explain the observed interaction between age and study group (greater increase in productivity among older workers in the intervention group, and smaller increase for older participants in the control group). As also noted in the Article, the authors believe the increase in productivity in the control group was due to a higher rate of tea growth between the early high season (our baseline period in June) and the peak high season (our evaluation period in July to October).

Finally, Khanna and Rao mention that "the study does not describe the effects of clustering". As described in the Article, randomisation in the PROSPER trial was done on an individual basis (rather than by village, work group, or other cluster), as was the analysis, so these are consistent. We recognise that there might be "clustering effects" due to the behaviour of study participants having been influenced by others with whom they work or associate. However, it is not possible to reliably describe the effect of any such effects in the trial, or their potential effect if glasses are eventually made available to everyone who needed them, so we did not comment on this in the Article. Such clustering effects might, in fact, be beneficial to the wider and more rapid promulgation of presbyopic spectacle wear.

We declare no competing interests.

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1 Khanna RC, Rao GM. Presbyopia and the Sustainable Development Goals. *Lancet Glob Health* 2018; **6:** e944–45.
2 Reddy PA, Congdon N, MacKenzie G, et al. Effect of providing near glasses on productivity among rural Indian tea workers with presbyopia (PROSPER): a randomised trial. *Lancet Glob Health* 2018; **6:** e1019–27.

For the **raw data** see https://www.qub.ac.uk/research-centres/CentreforPublicHealth/Research/PROSPER/